



**POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT**

I. IDENTIFICATION
01 STATE 02 SITE NUMBER
IL 3890008946

II. SITE NAME AND LOCATION

01 SITE NAME (proper, common, or descriptive name of site) Argonne National Laboratory-Illinois (ANL-IL) Facility 318, Burial of Compressed Gas Cylinders		02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER 9700 South Cass Avenue			
03 CITY Argonne	04 STATE IL	05 ZIP CODE 60439	06 COUNTY DuPage	07 COUNTY CODE 043	08 CON. DIST. 13
09 COORDINATES LATITUDE 41° 42' 00.0"		LONGITUDE 87° 58' 38.0"			

10 DIRECTIONS TO SITE (starting from nearest public road)

From I-55, exit South on Cass Avenue, turn west on Northgate Road to enter facility. The 318 Facility area is on the south side of ANL-IL, south of Meridian Road. It is a small fenced-in area located in the northeast corner of the 317 Facility area.

III. RESPONSIBLE PARTIES

01 OWNER (if owner) U.S. Department of Energy (DOE-CH)		02 STREET (business, mailing, residential) 9800 South Cass Avenue			
03 CITY Argonne	04 STATE IL	05 ZIP CODE 60439	06 TELEPHONE NUMBER (312) 972-2271		
07 OPERATOR (if owner and operator both owner) Argonne National Laboratory		08 STREET (business, mailing, residential) 9700 South Cass Avenue			
09 CITY Argonne	10 STATE IL	11 ZIP CODE 60439	12 TELEPHONE NUMBER (312) 972-3998	Aubrey Smith Envir. Compliance Officer	
13 TYPE OF OWNERSHIP (Check one) <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL <u>DOE-CH</u> <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER _____ (Specify) <input type="checkbox"/> G. UNKNOWN					

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A RCRA 3001 DATE RECEIVED: ____/____/____ MONTH DAY YEAR ☐ B UNCONTROLLED WASTE SITE (RCRA 103) DATE RECEIVED: ____/____/____ MONTH DAY YEAR ☒ C NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION <input checked="" type="checkbox"/> YES DATE <u>06, 22, 87</u> MONTH DAY YEAR <input type="checkbox"/> NO		BY (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER <u>DOE Environmental Survey</u> (Specify)			
02 SITE STATUS (Check one) <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN		03 YEARS OF OPERATION BEGINNING YEAR <u>1964</u> ENDING YEAR <u>1980</u> <input type="checkbox"/> UNKNOWN			

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN OR ALLEGED
Leaking or defective compressed gas cylinders were placed in post holes and buried. There are no records on the cylinders buried at the site, but it is recalled that gas cylinders such as halogens, interhalogens, hydrocarbons, and sulfur dioxide were buried at the site.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

The potential for groundwater contamination, for toxic gases to diffuse through the soil to the atmosphere, or for reaction, or adsorption of toxic gases on soil particles is present.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and exposures) <input type="checkbox"/> A. HIGH (inspection required promptly) <input type="checkbox"/> B. MEDIUM (inspection required) <input checked="" type="checkbox"/> C. LOW (inspect on time available basis) <input type="checkbox"/> D. NONE (no further action needed; complete current disposition form)			
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VI. INFORMATION AVAILABLE FROM

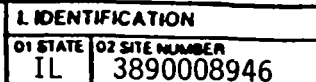
01 CONTACT Barry Fritz	02 OF (Agency Organization) DOE-CH, Operational & Envir. Safety Division		03 TELEPHONE NUMBER (312) 972-2271
04 PERSON RESPONSIBLE FOR ASSESSMENT C. L. Cheever	05 AGENCY DOE	06 ORGANIZATION ANL-IL	07 TELEPHONE NUMBER (312) 972-3311
08 DATE <u>4, 5, 88</u> MONTH DAY YEAR			

EPA FORM 2070-12 (7-81)

EPA Region 5 Records Ctr.



341940



☒ I HIGHLY VOLATILE
☐ J. EXPLOSIVE
☐ K REACTIVE
☐ L INCOMPATIBLE
☐ M NOT APPLICABLE



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
11 3890008946

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A GROUNDWATER CONTAMINATION 23,000 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 04 NARRATIVE DESCRIPTION

SEE ATTACHED

01 ☐ B SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☒ C. CONTAMINATION OF AIR 31,000 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 04 NARRATIVE DESCRIPTION

Toxic gases could diffuse through the soil to the atmosphere.

Population = 3,000 employees + 28,000 residents within three miles.

01 ☐ D FIRE/EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

01 ☐ E DIRECT CONTACT 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

01 ☒ F. CONTAMINATION OF SOIL 0.10 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED acres 04 NARRATIVE DESCRIPTION

The soil in which the gas cylinders were buried could potentially be contaminated by gases released from leaky gas cylinders.

01 ☒ G DRINKING WATER CONTAMINATION 23,000 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 04 NARRATIVE DESCRIPTION

SEE ATTACHED

01 ☐ H. WORKER EXPOSURE/INJURY 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ I POPULATION EXPOSURE/INJURY 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

CONTINUATION SHEET

Part 3- Description of Hazardous Conditions and Incidents

ANL-IL

IL 3890008946

Facility 318 Burial of Compressed Gas Cylinders

II. 01 A Groundwater Contamination

The potential for groundwater contamination exists. Groundwater in parts of the ANL-IL facility is in the perched condition because of the relative impermeability of the underlying silty clay. This clay can restrict downward water flow and create a lateral perched water-flow condition. The groundwater pattern in the area would probably follow the area topography, flowing south-easterly toward the Des Plaines River. Contaminated water may percolate downward into the perched groundwater and migrate in a southeasterly direction offsite. (Ref. (5), p.2)

Population = 3,000 employees plus 20,000 residents within three miles and north of the Des Plaines River.

II. 01 G Drinking Water Contamination

In the vicinity of ANL-IL, only subsurface water (from both shallow and deep aquifers) and Lake Michigan water are used for drinking purposes. The potential for contamination of groundwater used for drinking purposes does exist. Two principal aquifers are used as water supplies in the vicinity of ANL-IL. The upper aquifer is the Niagaran-Alexandrian dolomite which is about 200-ft. thick in the ANL-IL area and has a piezometric surface between 50 and 100 ft. below the ground surface. The lower aquifer is the Galesville sandstone, which lies between 490 and 1500 ft. below the surface. Maquoketo shale separates the aquifers and retards hydraulic connection between the aquifers.

The four domestic water wells now in use at ANL-IL are about 300-ft. deep in the Niagaran dolomite. All four wells are located north of the site. The nearest well is approximately one mile northeast of the site. Groundwater in the area of the site probably flows toward the southeast. The distance to the nearest well is one to two miles and a population of 3,000 to 10,000 is served.

Population = 3,000 employees plus 20,000 residents within three miles and north of the Des Plaines River.

(Ref. (1) p. 8,12; Ref. (3) p. 6, and Attachment 1; Ref. (5) p. 1-2.)



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PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
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II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

01 ☐ K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (include name(s) of species)

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

01 ☐ L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES
(Spills/runoffs/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: _____

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 23,000 See Attached

IV. COMMENTS

SEE ATTACHED

V. SOURCES OF INFORMATION (Cite specific references, e.g., State files, sample analysis, reports)

- (1) 1986 Annual Site Environmental Report for Argonne National Laboratory (Report #ANL-87-9) by N. Golchert and T. Duffy.
- (2) Phase I CERCLA Program, ANL-IL Installation Assessment Report (required by DOE order 5480.14), July 1986. (See attached.)

CONTINUATION SHEET

Part 3 - Description of Hazardous Conditions and Incidents

ANL-IL

IL 3890008946

Facility 318 Burial of Compressed Gas Cylinders

III. Total Population Potentially Affected

23,000 (3000 employees plus 20,000 residents within three miles and north of the Des Plaines River) (Ref. (1), p. 8).

IV. Comments

The site had 35 post holes which were 10 to 25-ft. deep and were used for burial of leaking or defective compressed gas cylinders. Several cylinders were placed in each hole and, in some holes, lime powder was added.

It was estimated that 100 twenty-gallon cylinders were buried at the site, but most of these have been bled off. The estimated 2,000 gallons of waste is probably an over estimation.

A "No digging permitted" sign is posted at the site. The site poses no significant threat or danger as long as it is not disturbed. (Ref. 2, p. 33)

V. Sources of Information (Continued)

- (3) 1988 Inventory of Federal Hazardous Waste Activities (for ANL-IL).
- (4) Environmental Assessment Related to the Operation of Argonne National Laboratory (DOE/EA-0181), August 1982.
- (5) ANL-IL Intra-Laboratory Memo; S. Y. Tsai to N. W. Golchert; Subject: Groundwater Monitoring Plan for the 317-319 Area; September 17, 1985.
- (6) Site Plan (ANL-IL Map), January 9, 1986.
- (7) ANL Map with PA legend, April 1988.
- (14) Certification Regarding Potential Releases from Solid Waste Management Units, Argonne National Laboratory (Continued); not dated.

Summary Report for Preliminary Assessment of the ANL-IL

Facility 318 - Burial of Compressed Gas Cylinders

4/13/88

Leaky or defective compressed gas cylinders were buried in 35 post holes at Facility 318. The toxic reactive gases that may remain will eventually be released and react with the soil or diffuse to the atmosphere. A "No Digging Permitted" sign has been posted at this facility.

Recommendation: (1) No further action is recommended.

CERTIFICATION REGARDING POTENTIAL RELEASES FROM
SOLID WASTE MANAGEMENT UNITSARGONNE NATIONAL LABORATORY
(CONTINUED)2. LandfillItem 1.(a) Present Onsite Landfill in 800 Area

Except for an initial 8-foot-deep pit in a limited area, the landfill has been developed with above-grade mounding and then covered with clay soil. It contains trash (waste basket disposal, etc.) and construction/demolition debris from onsite activities. It also contains special wastes such as spent-lime scrubber sorbent and ashes from the ANL Boiler House. From 1969 to 1979, liquid wastes including various RCRA-regulated wastes were poured into vertical a hole(s) bored in the northeast quadrant of the landfill. Aliphatic and aromatic hydrocarbons and PCB's were included; this information was presented to the EPA. There were also dry chemical wastes placed into the landfill. The landfill is permitted by the IEPA (#1981-P9-OP). There are groundwater monitoring wells located around the periphery of the landfill.

Item 1.(b) Abandoned Landfill at 319

The landfill started out with north/south trenches, an estimated 6- to 10-foot deep by 10- to 12-foot wide by several-hundred-feet long. It was later developed into an above-grade earth-covered mound of debris about 240-foot wide by 400-foot long. This landfill was not intended for disposal of any radioactive wastes. There was a vertical hole bored into the north end of the landfill into which liquid wastes were poured. This may well have included wastes which are now RCRA regulated. Truckloads of trash were dumped at the landfill without documentation of materials dumped. There are no groundwater monitoring wells at this site.

Item 1.(c) Compressed Gas Cylinders Burial Site, 318

The burial site is located in the northeast corner of the 317 area. It consists of about 35 post holes which were 10 to 25-foot deep and were used for burial of various compressed gas cylinders. Some of the cylinders contained halogen gases (RCRA regulated). There is no assurance that they were bled off to the atmosphere although many were leakers and were assumed to be empty at the time of burial. The fenced-in area about 30-foot wide by 100-foot long is locked and is posted to warn against digging.

Item 1.(d) Landfill Area South of ZGS and ^{East}~~West~~ of 317

This landfill was an embankment dumping ground where waste materials including trash from machining operations were dumped down a steep embankment and later covered with soil. This area was used in the earliest period--records do not exist. RCRA-regulated wastes could have been included with the general trash. There are no groundwater monitoring wells at this site.

2. Item 2. Impoundment Northeast of Building 129

The impoundment contains solids from the lime soda-ash potable water treatment plant effluent. There are about 140,000 cubic yards of the alkaline solids which have accumulated during 30 years of plant operation. The impoundment is about 800-feet long by 300-feet wide by about 15-feet deep. The water from this impoundment discharges to Sawmill Creek and is routinely above the 9.0 pH NPDES discharge limit. The impoundment kills vegetation and overlies the ANL well-water aquifer. ANL well water has not had any noticeable adverse effect. NPDES discharge sampling is summarized in the annual ANL Environmental Monitoring Report, e.g., ANL-85-17.

2. Incinerator

Item 3.(a) ANL Incinerator for Low Level Radioactive Waste, Building 310

The incinerator was equipped with two wet scrubbers followed by high-efficiency air-particulate (HEPA) filters and was operated for about three years (1951-54). The incinerator was constructed of 330 stainless steel and was a single combustion chamber equipped with three gas burners. It was disassembled and shipped to a DOE low-level waste burial site. The area in Building 310 where the incinerator was used was converted to other usage and there is no remaining concern from the incinerator operation.

Item 3.(b) Incinerator for Animal Carcasses, Building 202

The incinerator was operated sporadically during the period 1972 to 1975 and was shutdown in 1975. It is defunct but still in place. There is no remaining contamination or environmental concern.

Item 4. Underground Storage Tank for Used Oil, 800 Area

A 1,000-gallon steel underground tank was used until a 2,000-gallon stainless-steel underground tank was installed at the same location in about 1981. The steel underground tank was pumped out, filled with sand, and left in place. Used oil is accumulated in the underground tank until there is a sufficient amount for sale to a used-oil reprocessor.

Item 5. French Drain in the 317 Area

The French drain (hole in the ground) was used for the disposal of liquid wastes. Usage was discontinued in the 1960's. There are no records on its usage, but it was recalled to have been used for the discard of some currently RCRA-regulated wastes.

Item 6.(a) ANL Sanitary and Laboratory Wastewater Treatment Plant, 570

The sewage-treatment plant consists of two parallel gravity-fed sanitary-treatment systems and a settling-tank system for Laboratory wastewater. The combined plant effluent has been about a million gallons per day. The sanitary treatment is by clarigester tank, trickling filter, and clarifier followed by sand filters. The Laboratory wastewater goes to settling tanks (six 70,000-gallon concrete tanks) and then to a lined flow-equalization pond. The combined effluent is chlorinated and discharges to

Sawmill Creek. There are sludge-drying beds for both systems with drainage coming back through the treatment system.

Item 6.(b) ANL Boiler Blowdown Water Treatment, Building 108.

The alkaline wastewater from blowdown of the steam plant boilers was for many years treated with sulphuric acid to bring the pH to within an acceptable range. It was then discharged at NPDES Discharge Point #002. With the installation of a lift station about 1983, this acid treatment was discontinued

Item 6.(c) Industrial Wastewater Treatment Plant, Building 34.

This facility was used for treatment of acid, cyanide, and chromate waste solutions, and treatment of blowdown water from the uranium machine-shop scrubbers. Monitored and acceptable liquids were discharged to the ANL sanitary sewer. The sludges were transferred to the current Waste Operations' Building 306 for evaporation or other processing and disposal as radioactive waste. The facility is currently being decommissioned and, by 1986, there should be no further environmental concern.